

REMARKS/ARGUMENTS

The Examiner has now issued a fifth office action in this case.

The claims have not substantively changed over those originally filed.

Applicant, once again, respectfully, but most strongly objects, to the Examiner's piecemeal prosecution of this application.

The Examiner's attention is directed to M.P.E.P. 707.07(g) **Piecemeal Prosecution**.

Piecemeal prosecution should be avoided as much as possible. The Examiner ordinarily should reject each claim on all valid grounds available ☐ ☐

It is respectfully submitted that the Examiner's stated justification for the piecemeal prosecution on the basis of a reference that was not publicly available until Feb 01, 2005 is not a valid justification for the piecemeal prosecution.

Applicant further objects to the piecemeal prosecution on the basis that the Examiner in the present office action takes diametrically opposed positions on what the primary reference teaches.

In the rejection of the claims over the '819 patent under 35 USC102 and 35USC103, in Sections 3. and 4. of the Office Action, the Examiner takes the position (wrongly) that the '819 patent shows an elongate thermally conductive member and points to the tubularly shaped, cylindrical, hollow cooling member 3 and the flexible printed circuit board (PCB) 1 that wraps around member 3, as being an elongate thermally conductive member.

Then in section 5 of the Office Action the Examiner takes the inconsistent position (also wrong) that the '819 patent discloses an elongate thermally conductive member, i.e., cooling member 3, for carrying a printed circuit board 1.

So for the purposes of the rejections in Sections 3. and 4., the Examiner takes one position with respect to the teachings of the '819 patent and then in Section 5. the Examiner takes an inconsistent position with respect to the teachings of the '819 patent.

In other words, the Examiner is now shifting positions even in the same office action. It is respectfully submitted that the Examiner's shifting of positions and bases for rejection are impermissible.

STATUS OF APPLICATION

Claims 1-12, 14-33, 35-54 and 55-63 are in the application.

Claims 1-12, 14-33, 35-54 and 55-63 stand rejected.

1. Claims 1-5, 7-11, 17-18, 22-26, 28-32, 38-39, 43-47, 49-53, 59, and 60 stand ☐rejected under 35 U.S.C. 102(b) as anticipated by over U.S. Patent 6,848,819. (☐819). ☐
2. Claims 6, 12, 19, 27, 33, 40, 48, 54, and 61 stand ☐rejected under 35 U.S.C. 103(a) over the ☐819 patent.
3. Claims 1, 2, 14-16, 20-23, 35-37, 41-44, 51-54, 56-58, and 62-63 stand ☐rejected under 35 U.S.C. 103 (a) as being unpatentable over the ☐819 patent in view of U.S. Patent 6,799,864 (☐864) ☐and as evidenced by Roberts et al. U.S. Patent Application Publication 20020149312. ☐

DEFINITIONS

It is respectfully submitted that the Examiner's analysis of the references is fundamentally flawed on the basis that the Examiner cites definitions and references, but does not properly apply the definitions and references.

“CONDUCTIVITY vs CONDUCTIVE

First, it is respectfully submitted that the Examiner fails to understand the difference between ☐conductivity☐and ☐conductive☐. The Examiner treats the terms as being synonymous and is apparently interchanging the terms.

In *physics*, thermal conductivity, k , is the intensive property of a material that indicates its ability to conduct heat.

It is defined as the quantity of heat, Q , transmitted in time t through a thickness L , in a direction normal to a surface of area A , due to a temperature difference ΔT , under steady state conditions and when the heat transfer is dependent only on the temperature gradient.

The Examiner's attention is directed to the Hukseflux article that he has cited.

The second paragraph on page 1 states:

Thermal conductivity is a property of materials that expresses the heat flux f (W/m²) that will flow through the material if a certain temperature gradient DT (K/m) exists over the material.

The fourth paragraph on page 1 states:

It should be noted that thermal conductivity is a property ☐ .

The Hukseflux article lists ☐Orders of magnitude of the thermal conductivity☐of several materials.

In the engineering and physical sciences, it is common to classify materials as electrical conductors and electrical insulators depending upon whether the material is “conductive” or not. Similarly, it is common to classify materials as thermal

conductors and thermal insulators depending on whether the material is thermally “conductive” or not.

The Examiner makes no distinction as to whether a material is conductive or not based upon the fact that conductivity (which is a material property) may be measured for all materials. The Examiner’s approach is not consistent with engineering and scientific understanding. It is respectfully submitted that the Examiner’s approach is wrong and does extreme violence to all electrical, electronic, semiconductor, material science, and physics based inventions and teachings. The Examiner’s approach destroys any meaning to “conductive” and “insulative”

Still further, the Examiner has selectively read the dictionary and various references in an attempt to meet the structural limitations of Applicant’s novel structures. It is respectfully submitted that although a broad interpretation of terms is a permissible, and even desirable, methodology in the determination as to claim coverage, **it is not permissible to utilize an interpretation that is not applicable to the invention claimed.**

DEFINITION OF MEMBER

The Examiner points to the definition of “member” selects an inappropriate specialized one of the several definitions and then applies a “gloss over” of the inappropriate definition to meet the structure of the claim element.

1. A distinct part of a whole, especially:
 - a. *Linguistics*. A syntactic unit of a sentence; a clause.
 - b. *Logic*. A proposition of a syllogism.
 - c. *Mathematics*. An element in a set.
2. A part or an organ of a human or animal body, as:
 - a. A limb, such as an arm or a leg.
 - b. The penis.
3. A part of a plant.
4. One that belongs to a group or an organization: *a club member; a bank that is a member of the FDIC.*
5. *Mathematics*. The expression on either side of an equality sign.
6. A structural unit, such as a beam or wall.

The first definition is not relevant to the present invention. The instant invention does not relate to “Linguistics” “Logic” or “Mathematics” However, the “member” of the structure recited is a “distinct part of a whole” That definition does not state, as the Examiner is attempting to find, that the “distinct part” includes the “whole.”

The instant invention is not a part or an organ of human or an animal body.

The instant invention is not a part of a plant.

The instant invention is not related to a group or organization.

The instant invention does not pertain to mathematics.

The most relevant definition of member is “a structural unit”.

It is respectfully submitted that the Examiner has turned the definition of “member” on its head. The definition of “member” in the context of the present invention is “a structural unit”

Where in the definition that the Examiner relies on is there any statement that a “member is ...a structural unit...each of which comprises other members.”?

Does a “beam” comprise other “beams”? Does a “wall” comprise other “walls”?

It is respectfully submitted that nothing in the definition of a “member” states that a member comprises other members. It is also respectfully requested that the Examiner is not relying on the cited definition of “member” but rather is distorting the definition in an attempt to meet the structural limitations of the claimed invention.

If it is a wall that is referred to, it is respectfully submitted that one would refer to a “wall member”, placing the term “member” in context. If the term “wall member” were used, it would include the structure of that wall, but would not include, for example, a ceiling supported by the wall or a floor upon which the wall is supported. However, the attempted modification that the Examiner is relying on is so expansive that a “wall member” could include the floor, the ceiling, and even connecting walls. All terms must be considered in context- no matter how broad or expansive the definition.

It is respectfully submitted that the Examiner’s analytical logic at pages 16 and 17 with respect to a “white house” or “white car” is nonsensical and inappropriate. The Examiner’s logic, might be appropriate in discussing non-technical and non patent matters, but is wholly inappropriate to an analysis of patent claim structures. It is suggested that the Examiner carefully review the requirements for examination of patent claims. By way of example, apparently it would make no difference to the Examiner if he had a Kia, a Buick, or a Porsche as long as they are all “white” they are substantially the same. By way of similar analogy, a cooking pot includes a metal container portion that comprises the bulk of the pot and a relatively small thermally non-conductive handle. By using the Examiner’s approach, it does not matter how one picks up the pot even when the metal portion is hot, because its all just a pot.

DEFINITION OF ELONGATE

The American Heritage® Dictionary defines elongate when used as an adjective as follows:

elongate (adj.) Made longer; extended.

elongate (adj.) Having more length than width; slender.

The Examiner has at page 16 presented an argument with respect to the definition of elongate. The Examiner states:

As correctly quoted by Applicant, 'elongate' is something 'extended' (page 24), the cross-section view of Fig. 2B must be extended to be(come) the tube; furthermore, if one were to interpret 'elongate' using only the narrow meaning 'having more length than width' as quoted by Applicant, one of ordinary skill in the art would find it hard to accept that the tube 3/1, having an infinite combinations (sic) of various lengths and widths and only a few occurrences of length= width, not having more length than width (sic).

Applicant can not make sense of what the Examiner is attempting to state since the statement makes no logical sense.

However, Applicant has consistently utilized the term "elongate" in the specification consistent with the definition of "having more length than width."

If what the Examiner is attempting to argue is that somehow the statement at col.4, lines 41-61 of the '819 reference teaches or suggests an elongate structure. However, the passage relied makes no mention of an elongate structure and merely states that "an array of LEDs 2 is laminated around a tubularly shaped, cylindrical hollow cooling member."

It is respectfully submitted that the length of a tubularly shaped, cylindrical member is measured along its axis and that the width of such a member is its diameter. Typical rotating lights for emergency vehicles are "squat" in shape, i.e., the length is equal to or less than the width of the light.

AMENDMENT TO THE SPECIFICATION

To make it perfectly clear and to remove any ambiguity, a definitional paragraph is added to the Specification as paragraph [0038] as follows:

[0038] As used in the foregoing description and in the claims appended hereto, certain terms are utilized that may be interpreted by some in a non-conventional manner. So that the meaning of those certain terms is clear, the following terms are defined as follows:

"Elongate" as used herein means having more length than width;

"Member" as used herein means "a structural unit" and as such does not refer to the elements that may form the structural unit;

"Conductive" as used herein is an adjective that is used to describe a "conductor" as contrasted with an "insulator." Conductors have a "conductivity" property that is high as contrasted to insulators that have a low "conductivity" ("conductivity" is a physical property referred to as the conductance of a material);

“Thermally conductive member” is structural unit that is a thermal conductor. Typical thermal conductors include metals as contrasted with thermal insulators such as polyamide and similar conventional materials utilized for printed circuit boards.

It is believed that the foregoing amendment to the specification provides a limitation to the claimed structures that results in a clarification such that much of the Examiner’s bases for rejection are traversed. It is respectfully submitted that the definitions are consistent with the specification and claims as originally filed and are consistent with Applicant’s stated position throughout prosecution of this application.

It is further believed that if the Examiner properly considers the invention as claimed and the prior art references with these correct and proper definitions, the claims will all be allowable.

35 U.S.C. 102(E) REJECTIONS

Standard for anticipation

The standard for anticipation under 35 U.S.C. 102 is set forth in M.P.E.P. 2131:

‘A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.’ *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631... ‘The identical invention must be shown in as complete detail as is contained in the claim.’ *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913,1920 (Fed. Cir. 1989)....

For anticipation under 35 USC 102, the reference must teach every aspect of the claimed invention either explicitly or implicitly. Any feature not directly taught must be inherently present.

The Examiner has not met the standards for anticipation under 35 USC 102 of:

‘A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.’ or

‘The identical invention must be shown in as complete detail as is contained in the claim.’

The Examiner is not permitted to change the teachings of a reference in order to meet the structure claimed by an applicant.

As will be specifically pointed out below, the Examiner has failed to follow this clear directive for determining anticipation.

The '819 Patent

The Examiner relies upon the '819 patent as the primary reference for rejecting all claims in the application.

It is respectfully submitted that the '819 patent does not anticipate or make obvious the novel structures of Applicant's invention as claimed.

The '819 patent teaches away from Applicant's novel structures.

The '819 patent is directed to the dissipation of heat away from a printed circuit board and relies upon heat conduction through the printed circuit board from the copper bonding pads for the LEDs to a metal layer plated on the bottom of the pc board and then to a heat sink.

The specific problem to which the '819 patent is set out beginning at col. 1, line 60. The '819 patent teaches that heat from a LED chip is eliminated via the electrical terminal of the LED. Depending on the LED structure to which the teachings of '819 is addressed, the heat is conducted by the electrical terminal onto solder points that are on copper solder pads on a printed circuit board. **"From the solder points, the heat at first propagates in the copper pads and then on the epoxy resin material in the plane of the printed circuit board. Subsequently, the heat is output large-area to the environment by thermal radiation and thermal conduction."** (col 2, lines 2-7)

The '819 patent continues on to state that the **thermal resistance for one LED on a pc board is relatively slight, but becomes significant when many LEDs are "arranged in close proximity on a circuit board."** (Col 2, lines 11-12). **This is explained in the '819 patent as a result of a "smaller percentual area of the PCB is now available for each individual LED for heat transmission to the environment."**

"An object of the ('819) invention is to specify a surface-mounted LED arrangement that is distinguished by an improved heat elimination from the LEDs." (Col. 2, lines, 37-39)

The structures of the '819 patent are each a printed circuit board having surface mounted LEDs on one side of the circuit board, the side of the board opposite the LEDs has a metallic layer that is electrically insulated from the LEDs by the circuit board. The metal surface is applied to a cooling member. The cooling member is copper or aluminum or a

cooling plate. The cooling member is secured to the circuit board by thermally conductive adhesive. (Col. 2, lines 44-62)

The printed circuit board is of plastic material that conducts heat poorly. (Col. 2, lines 63-65)

The copper pads on the circuit board "should be as large as possible in order to broaden the heat path through the printed circuit board material. (Col. 3, lines 6-9).

It is clearly apparent that the teachings of the '819 patent are directed to and limited to a structure in which a circuit board carries the LEDs. The LEDs are soldered to metal pads on the same surface of the circuit board. Heat is transferred from the pads, through the circuit board to a metal surface on the other surface of the circuit board, through an adhesive layer to a cooling member.

Thus, the structures of the '819 patent require that the LEDs are carried on copper solder pads on one surface of a circuit board and heat transfer is via solder pads through the circuit board to a metallization layer on the opposite surface of the circuit board and then to the cooling member via an adhesive layer.

The LEDs are not carried by the cooling member.

The '819 patent shows and teaches structures that are fundamentally different from Applicant's claimed invention.

More specifically, the structures shown and described in the '819 patent all utilize surface mount LEDs. The LEDs are mounted to and carried on one surface of a thermally and electrically insulating printed circuit board. More specifically, the printed circuit board is a plastic material. A cooling member is provided on the other surface of the PC board. The printed circuit other surface is secured to the cooling member.

PRESENTED PRESENTED EMBODIMENTS

The embodiment of the present invention shown in FIG. 1A contains a printed circuit board 1 on which a plurality of preferably surface-mounted LEDs 2 are applied. In a known way, the printed circuit board 1 thereby forms a circuit that comprises terminal surfaces for the mounting of the LEDs at defined locations. These terminal surfaces are provided, for example, with lands for soldering in an automatic surface mount device (SMD) equipping unit, and the LEDs 2 have their electrical contacts 2a soldered to these terminal surfaces in a subsequent mounting step.

The printed circuit board 1 can be a rigid printed circuit board, such as type FR4, and constructed of an epoxy resin

It is clearly evident that the printed circuit board is plastic or epoxy and is not a thermal conductor. This is explicitly stated at col. 3, lines 1-5

flexible plastic. For example, it can be composed of polyester or polyamide film, or it may comprise what is often referred to as flex-board. Flex board is generally multi-layer printed circuit boards that are uniformly constructed of a plurality of polyamide carrier films.

5

FR4 circuit board material as well as “flex board” of polyester and polyamide are well know thermal insulators.

The relevant structure of the devices of the ‘819 patent are clearly set out in claim 1 of the ‘819 patent:

1. A surface-mounted LED arrangement, comprising:
 - a printed circuit board having a principal surface and a secondary surface, said printed circuit board comprising a plastic material,
 - a plurality of LEDs arranged on said principal surface,
 - a metallic layer provided on said secondary surface that is electrically insulated from said plurality of LEDs,
 - a cooling member connected to said secondary surface,
- wherein said printed circuit board is secured to said cooling member with at least one of a thermally conductive paste, a thermally conductive adhesive and a thermally conductive film, and

20

25

35 USC 102 REJECTION

Claims 1-5, 7-11, 17-18, 22-26, 28-32, 38-39, 43-47, 49-53, 59, and 60 stand rejected under 35 USC 102.

Claim 1, recites, inter alia: A light source comprising: an **elongate** thermally conductive member having an outer surface; **at least one solid state light source carried on said elongate member outer surface...**”;

Claim 2, recites, inter alia: A light source comprising: an elongate thermally conductive member having an outer surface; a plurality of solid state light sources carried on said elongate member outer surface ...”;

Claim 22, recites, inter alia: A radiation emitting source comprising: an elongate thermally conductive member having an outer surface; at least one radiation emitting semiconductor device carried on said elongate member outer surface;

Claim 23, recites, inter alia: A radiation emitting source comprising: an elongate thermally conductive member having an outer surface; a plurality of radiation emitting semiconductor devices carried on said elongate member outer surface...”;

Claim 43, recites, inter alia: A radiation emitting source comprising: an elongate thermally conductive member having an outer surface; at least one radiation emitting solid state device carried on said elongate member outer surface...”;

Claim 44, recites, inter alia: A radiation emitting source comprising: an elongate thermally conductive member having an outer surface; a plurality of radiation emitting solid state devices carried on said elongate member outer surface...”;

Applicant provides the following comments that clearly traverse any rejection of the claims based on the ‘819 patent.

Standard for anticipation

The standard for anticipation under 35 U.S.C. 102 is set forth in M.P.E.P. 2131:

‘A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.’ *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631...
‘The identical invention must be shown in as complete detail as is contained in the claim.’ *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913,1920 (Fed. Cir. 1989)....

For anticipation under 35 USC 102, the reference must teach every aspect of the claimed invention either explicitly or implicitly. Any feature not directly taught must be inherently present.

As will be specifically pointed out below, the Examiner has failed to follow this clear directive for determining anticipation.

Application of the standard for anticipation

In rejecting claim 1, the Examiner states:

‘[T]he reference discloses a light source comprising:
an elongate thermally conductive member (generally indicated at 3/1, the
‘tubularly shaped, cylindrical, hollow cooling member 3’ and the flexible

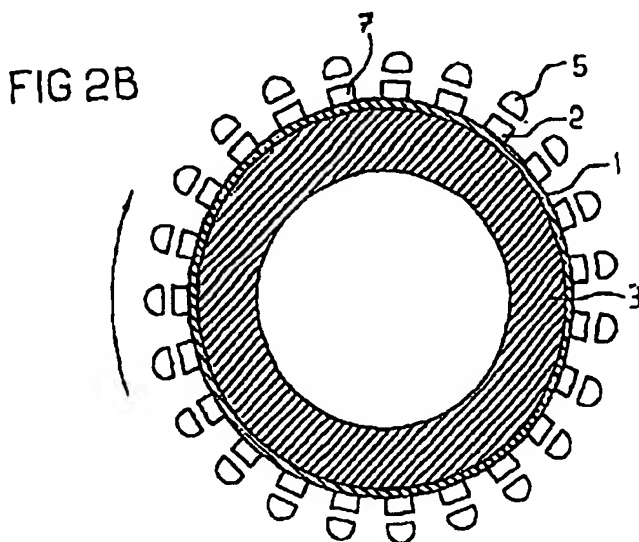
printed circuit board (PCB) 1 that wraps around member 3, Fig. 2B, col. 3, line 55, through col. 4, line 61, particularly col. 4, lines 1-23 and lines 41-61, 'elongate' is broadly interpreted, and so are 'member' and all other terms in all the claims hereinafter, and note that 'thermally conductive member' does not require the entirety of the member to be conductive) having an outer surface;

at least one solid-state light source (2, "LED", col.3, lines 55-60, col. 1, lines 5-10) carried on said elongate outer surface (FIG. 2B);

one or more electrical conductors (electrical conductors, not shown, col. 3, lines 1-17) carried by said elongate member and connected to said at least one solid-state light source to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat away from said at least one solid state light source to fluid contained by said elongate thermally conductive member (co. 4, lines 41-61).

points to the specific embodiment of FIG. 2B and what he identifies as "3/1" as being the elongate thermally conductive member.



First, the structure of FIG. 2B is not an elongate structure.

The American Heritage® Dictionary defines elongate:

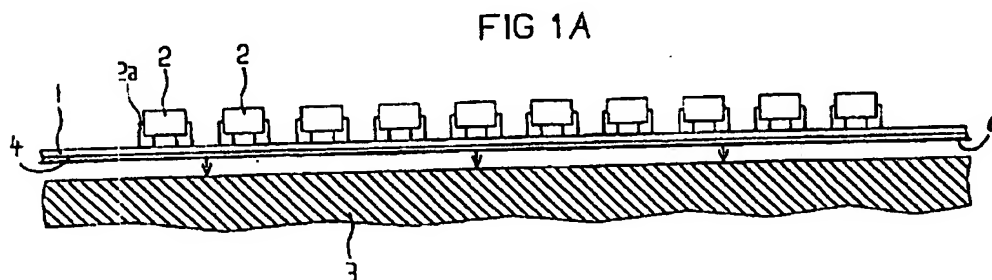
elongate (adj.) Made longer; extended.

elongate (adj.) Having more length than width; slender.

FIG. 2B does not show an elongate structure. The description of FIG. 2B fails to describe any structure that is clearly elongate. Similarly none of the drawings 1A, 2A, 2B, 2D show elongate members since they are all cross sections and as such show only at best a portion of one of the length or width of the member 3. FIG. 1B shows the only PC

board 1 in its entirety and the structure is square not elongate. The squareness of the structure of FIG. 1B is easily determined by measuring the length and width of the structure. Little can be determined from the drawing of FIG. 2C since neither the drawing or description shows the cooling member or members 3.

In addition, the Examiner mischaracterizes the structure of FIG. 2B. **The plain teachings of the reference clearly describe "3/1" as two separate elements and not as a unitary structure. The arrangement of "3/1" is shown and described more clearly in the alternate embodiment of FIG.1A.**



The Examiner in rejecting the same claims in Section 5 of the office action takes the inconsistent position that the '819 reference teaches an elongate thermally conductive member 3 carrying a flexible printed circuit (PCB1) which in turn carries LEDs 2.

The Examiner apparently believes that it is permissible to change his interpretation of what a reference teaches to support different rejections. The Examiner's approach is wrong and finds no support in the Patent Laws, Patent Rules, MPEP or patent office practice for at least the 30+ years that the undersigned has been a patent attorney.

It is also respectfully submitted that it is impermissible for the Examiner to make up his own definition of words- and in particular to construct definitions that are solely contrived to form a basis of claim rejection.

In Sections 3 and 4 of the Office Action, the Examiner in trying to meet the structure of "an elongate thermally conductive member" resorts to combining two members, i.e., **"tubularly shaped, cylindrical, hollow cooling member 3' and the flexible printed circuit board (PCB) 1 that wraps around member 3"**. By any normal reading, the Examiner is saying that the one member (3) and another member (PCB 1) are a "member." It is respectfully submitted that no normal definition of "member" would permit the combining of two members and calling it one member.

It is clear from the descriptions of the structures of FIG.1A and 2B that **element 1 in all drawings is a plastic or epoxy electrically insulating and thermally insulating printed circuit board.** Element 3 is a thermally conductive member to which printed

circuit board 1 is attached with an adhesive layer 6. Layer 4 is a metal layer on the back side of the printed circuit board 1.

It is clear from the drawings that the thermally conductive member 3 does not carry its LEDs 2 on its outer surface. **Rather, the thermally non-conductive printed circuit board 1 carries the LEDs 2. The Examiner's attention is again directed to the reproduced portions of the reference above which clearly state that the LEDs are carried on the printed circuit board 1 and not on the structure 3.**

It is clear from a plain reading of the descriptions of the structures in the '819 patent that the printed circuit board 1 carries LEDs 2 on one surface and carries the heat sink 3 on its opposite surface.

In other words, **the '819 patent teaches away from the novel structures of applicant's claimed invention** which set forth structure in which the LEDs, solid state light sources, radiation emitting semiconductor devices, and radiation emitting solid state devices are carried on the elongate thermally conductive member.

The Examiner has not met the standards for anticipation under 35 USC 102 of:

'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.' or

'The identical invention must be shown in as complete detail as is contained in the claim.'

The Examiner is not permitted to change the teachings of a reference in order to meet the structure claimed by an applicant. The Examiner is not permitted to change definitions of words to meet the structure claimed by applicant.

No elongate thermally conductive member having an outer surface carrying LED's is shown, taught or suggested in the '819 patent. The '819 patent teaches an insulating PCB carries the LEDs and a thermally conductive member (3) carries the PCB.

On this basis alone, claims 1, 2, 22, 23, 43, and 44 are not anticipated by the structures shown and taught in the '819 patent.

All of the claims in the application depend from base claims 1, 2, 22, 23, 43, and 44. For the same reasons that the base claims are not shown, taught or made obvious by the '819 patent, these claims that add additional limitations are not shown, taught or made obvious by the '819 patent.

The Examiner, for purposes of rejection of the base claims takes the unfounded position that the elongate thermally conductive **member** is arrangement "3/1", but later in the office action he **takes the inconsistent position that the "arrangement" is actually a flexible circuit and an elongate thermally conductive member. The position taken**

with respect to claims 14, 35 and 9 is inconsistent with the position the Examiner takes with respect to the base claims.

The “elongate thermally conductive member” that the Examiner points to is not a member, but is a multimember structure comprising layers of a printed circuit board 1, and adhesive layer, and a thermally conductive member 3. In addition, by the express language of the ‘819 patent, the printed circuit board is thermally insulating, not thermally conducting.

In short, the structure 3/1 is not elongate. The structure 3/1 is not thermally conductive. The structure 3/1 is not a “member.”

It is respectfully submitted that the Examiner’s analysis is fundamentally flawed.

Based on the foregoing, none of claims 1-5, 7-11, 17-18, 22-26, 28-32, 38-39, 43-47, 49-53, 59, and 60 are anticipated, shown, taught or made obvious by the ‘819 patent.

In addition, the Examiner in rejecting claims 4, 25, and 46; and 9, 10, 30, 31, 51 and 52 states that:

‘819 discloses “that said elongate thermally conductive member (3) comprises one or more heat dissipation protrusions or extrusions (“cooling ribs and/or rough surface” col. 2, lines 55-62), and further discloses that said extrusion (extruded portions-ribs) is an aluminum extrusion (because said extrusion is formed from said elongated thermally conductive member 3, which is formed of aluminum – col. 4, lines 5-9)

The Examiner has apparently misread the ‘819 reference. **The words “extrusion” and “extruded” do not appear anywhere in the ‘819 reference.** The Examiner makes an impermissible leap that the aluminum plate shown and described is an extrusion. The operative portion of the ‘819 patent (col. 2, lines 55-62), in its entirety states:

The cooling member can be composed of copper or aluminum or of a cooling plate, and the printed circuit board is preferably secured to it with a thermally conductive paste, a thermally conductive adhesive, a thermally conductive film or the like. It should enable an optimally good heat dissipation at its back side. To this end, for example, it can be painted black and/or comprise cooling ribs and/or a rough surface.

From the mere suggestion of the three underlined words, the Examiner makes the leap that the reference discloses “one or more heat dissipation protrusions or extrusions.” However, there is no enabling disclosure made of such in the ‘819 patent.

In addition, from those three words, **the Examiner then constructs a modified FIG. 2B drawing with ribs that the Examiner adds.**

The Examiner then, in reliance, not on the '819 reference, but on the Examiner's own drawing constructed utilizing hindsight, utilizes his drawing to reject claims.

The Examiner's exercise in constructing a disclosure from the reference is not a permissible examination.

The test for anticipation is not what structure the Examiner can, given a reference and using the hindsight use of applicant's disclosure, construct.

The Examiner has failed to comply with the clear mandate for determine anticipation under 35 USC 102.

The Examiner carries this failure to comply with the determination of anticipation even further in his rejection of claims 7, 28, and 49 where he again relies upon his drawing and not the disclosure of the '819 reference

For these additional reasons, claims 4, 5, 7, 8, 9, 10, 11, 18, 25, 26, 28, 29, 30, 31, 32, 39, 46, 47, 49, 50, 51, 52, 53, and 60

35 USC 103 rejection over '819

The Examiner's rejection of claims 6, 12, 19, 27, 33, 40, 48, 54, and 61 under 35 U.S.C. 103(a) over the '819 patent is respectfully traversed.

Each of the claims rejected depends from one of base claims 1, 2, 22, 23, 43, and 44. For the same reasons that these base claims are not anticipated, shown, taught or made obvious by the '819 patent, claims 1, 2, 22, 23, 43, and 44 are not shown, taught or made obvious by the '819 patent.

In addition, the Examiner again mischaracterizes the teachings of the '819 patent where he states:

"The reference further discloses ... said elongate thermally conductive member comprises a tube..."

The reference fails to disclose that the tubular construction of the member 3 is elongate as pointed out above.

In addition, the '819 patent teaches away from the present invention since it teaches the use of an intermediate insulating printed circuit board between the LEDs and the heat sink.

For these additional reasons, claims 6, 12, 19, 27, 33, 40, 48, 54, and 61 are not shown, taught or made obvious by the '819 patent.

Still further, the Examiner's rejection of claims 19, 40 and 61 is traversed,

The Examiner, in rejecting these claims states:

"However, the reference does not disclose using a clip...as claimed."

The Examiner then states that "various securing devices were just different configurations one of ordinary skill in the art would find obvious for mounting or securing said elongate thermally conductive member into said fixture, and therefore such selecting of securing devices would have been obvious to one of ordinary skill in the art..."

It is respectfully submitted that the Examiner has failed to follow the factual inquiries set forth in *Graham v John Deere*.

"The factual inquiries set forth in *Graham v. John Deere Co.*, 148 USPQ 459, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or unobviousness."

It is inherent in these inquiries that the Examiner must have an evidentiary basis for the determinations made. The Examiner must consider each piece of prior art for what it fairly teaches within its four corners.

The Examiner states that the reference does not show a clip. The reference also does not show any way to mount "an elongate thermally conductive member." It is therefore submitted that the Examiner's rejection of claims 19, 40, and 61 fails to meet the requirements of *Graham*.

It is respectfully submitted that the Examiner has failed to properly determine the differences between the prior art and the invention as claimed.

3. The Examiner makes no effort to resolve the level of skill of one skilled in the lighting arts.

For these additional reasons, the rejection of claims 19, 40 and 61 is further traversed.

For the reasons set forth above, claims 6, 12, 19, 27, 33, 40, 48, 54, and 61 are not shown, taught or made obvious by the '819 patent.

35 USC 103 rejection based on '819 and '864 and Roberts

The Examiner's rejection of Claims 1, 2, 14-16, 20-23, 35-37, 41-44, 51-54, 56-58, and 62-63 stand "under 35 U.S.C. 103 (a) as being unpatentable over the '819 patent in view of U.S. Patent 6,799,864 ('864) "and as evidenced by Roberts et al. U.S. Patent Application Publication 20020149312" is respectfully traversed.

As noted above, the Examiner's characterization of the teachings of the '819 patent in this rejection are contrary to the Examiner's characterization of the teachings of the '819 patent in this rejection.

Here, the Examiner states that the '819 reference discloses:

an elongate thermally conductive member ("tubularly shaped cylindrical, hollow cooling member 3", Fig. 2B, col. 3, lines 55 through col. 4, lines 1-23 and lines 41-61, "elongate" is broadly interpreted)
for carrying a flexible printed circuit (flex PCB 1, which includes a metal-core copper layer 4) or an electrically insulating layer (1)
which in turn carries a plurality of solid state light sources...."

The Examiner, instead of comparing the structures claimed by Applicant attempts to characterize the invention based solely on the drawings of the illustrative embodiments and then states:

In other words, **the difference between the reference and the claims is the technique for mounting the various solid state light sources ...on an elongate thermally conductive member....**

The Examiner then characterizes the teachings of the '819 patent as:

surface-mounting solid state light sources (LED2) on a metal clad flex PCB (1) on elongate thermally conductive member (3)

The Examiner wrongly characterizes all the claims of Applicant as:

surface-mounting solid state light sources (LED109) on elongate thermally conductive member (101) via through holes in flex PCB 131/129

The Examiner characterizes the disclosure of Bohler. The Examiner states:

Bohler, in also disclosing a light source and a radiation emitting source, and in particular in the same effort to reduce heat from operating solid state light sources, teaches that surface-mounting solid state light sources (100) on **elongate thermally conductive member** ("thermally conductive spreader" slug 110/ "thermally conductive core" fins 64', Fig. 3, cols. 1-4, particularly col. 4, lines 1-25) via through-holes (122) in PCB 120 allows for utilizing high-power solid-state LEDs.

Spreader 110 is not an elongate thermally conductive member. Spreader 110 is not elongate as defined hereinabove.

The Examiner relies upon Roberts to justify modifying the '819 patent in accordance with the teachings of Bohler on the basis that Roberts suggests that using high power LEDs "produce better light radiation." The Examiner points to and misreads paragraph [0016] as supporting that position.

However, what Roberts actually states in paragraph [0016] is that it is not desirable to limit the power to high power LEDs. There is no suggestion, as the Examiner states, of producing better light radiation.

The Examiner's proposed modification of the '819 patent does violence to the teachings of the '819 patent. The entirety of the '819 patent is to improve heat dissipation through a printed circuit board. There is no suggestion in the '819 patent that there be through holes. The structure disclosed in the '819 patent is directed to the dissipation of heat from a plurality of LEDs mounted on a PCB. Similarly, there is no suggestion in Bohler that its teachings may be applied to the structure of the '819 patent. As pointed out above, Roberts is not a nexus between the two patents. The only suggestion to modify the structure of the '819 patent comes from a hindsight application of the structure of Applicant's novel structure.

Applicant's novel structures as set forth in the independent claims are

CLAIM 1. A light source comprising:

- an elongate thermally conductive member having an outer surface;
- at least one solid state light source carried on said elongate member outer surface;
- one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one solid state light source to supply electrical power thereto; and
- said elongate thermally conductive member being configured to conduct heat away from said at least one solid state light source to fluid contained by said elongate thermally conductive member.

CLAIM 2. A light source comprising:

- an elongate thermally conductive member having an outer surface;
- a plurality of solid state light sources carried on said elongate member outer surface at least some of said solid state light sources being disposed in a first plane and others of said solid state light sources being disposed in a second plane not coextensive with said first plane;
- electrical conductors carried by said elongate thermally conductive member and connected to said plurality of solid state light sources to supply electrical power thereto; and
- said elongate thermally conductive member being configured to conduct heat away from said solid state light sources to fluid contained by said elongate thermally conductive member.

CLAIM 22. A radiation emitting source comprising:

- an elongate thermally conductive member having an outer surface;

at least one radiation emitting semiconductor device carried on said elongate member outer surface;
one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one radiation emitting semiconductor device to supply electrical power thereto; and
said elongate thermally conductive member being configured to conduct heat away from said at least one radiation emitting semiconductor device to fluid contained by said elongate thermally conductive member.

CLAIM 23. A radiation emitting source comprising:

an elongate thermally conductive member having an outer surface;
a plurality of radiation emitting semiconductor devices carried on said elongate member outer surface at least some of said radiation emitting semiconductor devices being disposed in a first plane and others of said radiation emitting semiconductor devices being disposed in a second plane not coextensive with said first plane;
electrical conductors carried by said elongate thermally conductive member and connected to said plurality of radiation emitting semiconductor devices to supply electrical power thereto; and
said elongate thermally conductive member being configured to conduct heat away from said radiation emitting semiconductor devices to fluid contained by said elongate thermally conductive member.

CLAIM 43. A radiation emitting source comprising:

an elongate thermally conductive member having an outer surface;
at least one radiation emitting solid state device carried on said elongate member outer surface;
one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one radiation emitting solid state device to supply electrical power thereto; and
said elongate thermally conductive member being configured to conduct heat away from said at least one radiation emitting solid state device to fluid contained by said elongate thermally conductive member.

CLAIM 44. A radiation emitting source comprising:

an elongate thermally conductive member having an outer surface;
a plurality of radiation emitting solid state devices carried on said elongate member outer surface at least some of said radiation emitting solid state devices being disposed in a first plane and others of said radiation emitting solid state devices being disposed in a second plane not coextensive with said first plane;
electrical conductors carried by said elongate thermally conductive member and connected to said plurality of radiation emitting solid state devices to supply electrical power thereto; and
said elongate thermally conductive member being configured to conduct heat away from said radiation emitting solid state devices to fluid contained by said elongate thermally conductive member.

None of these independent claims recite either a PCB or any apertures in PCBs. Accordingly, none of the independent claims are shown, taught or made obvious by the references taken singly or in combination.

Still further, Bohler teaches away from the structure of Applicant's invention in that there is no teaching of an elongate thermally conductive member being configured to conduct heat away from said at least one radiation emitting solid state device or LED to fluid contained by said elongate thermally conductive member.

To the contrary, any conduction of heat is to the ambient air outside of the heat sink.

None of the independent claims are shown, taught or made obvious by the references. Accordingly none of the dependent claims are shown, taught or made obvious.

MPEP 2143.01 provides the guidance that the proposed modification of the prior art cannot change the principle of operation of the prior art reference.

It is respectfully submitted that the Examiner pay attention to the examination standards for determination of obviousness. The Examiner's attention is drawn, in particular, to MPEP 706.02(j) and MPEP 2143 and the three basic criteria that must be set out to establish a prima facie case of obviousness.

The first criteria is that **"there must be some suggestion of motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings."**

"Second, there must be a reasonable expectation of success."

"Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success **must both be found in the prior art and not based on applicants disclosure.**" MPEP 2143 quoting *In re Vaeck*

MPEP 706.02(j) quotes *Ex Parte Clapp*: "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention, or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to be obvious in light of the teachings of the references."

The '819 patent and the Bohler patent teach structurally different approaches utilizing LED components that are not interchangeable. There is no reasonable basis for modifying the structure of the '819 patent as suggested by the Examiner. Even assuming one were to modify the structure of the '819 patent in view of the Bohler patent, the resulting structure would not teach or suggest the limitations in the claims.

The Roberts patent does not provide the nexus for modifying the '819 patent in view of the Bohler patent.

The Examiner even acknowledges that it is not clear what additional modifications might be necessary to provide an operational modified structure at the sentence extending from page 11 to page 12 of the office action.

Accordingly, the Examiner has not shown that the references expressly or impliedly suggest the claimed invention, nor has he presented a convincing line of reasoning as to why the artisan would have found the claimed invention to be obvious in light of the teachings of the references.

It is respectfully submitted that the Examiner has not followed the examination standards for determination of obviousness.

Accordingly, the rejection based on the combined references is traversed.

CONCLUSION

It is respectfully submitted that none of the claims presently in the application are shown, taught or made obvious by any of the references cited taken singly or in any combination.

Reexamination and reconsideration are requested. It is further requested that the claims be allowed and the application be passed to issue. It would be appreciated to receive an early notice of allowance.

Should there be any issues that may be resolved telephonically, the Examiner is invited to call the undersigned at 602-463-2010.

Respectfully submitted,

/Donald J Lenkszus/

Donald J. Lenkszus, Attorney for Applicant
(Reg. No. 28,096)

April 30, 2007